Department of Oncology-Pathology

The effects of breast cancer treatment on cognitive functions

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ABSTRACT

Aims Women with breast cancer have reported difficulties with memory, attention, and concentration during or after adjuvant treatment. Whether these symptoms are side effects of treatment has not been established. The aim of this project was to determine the effects of early-stage breast cancer (BC) diagnosis and treatment on cognitive functions, quality of life, and psychological wellbeing. A secondary aim was to identify any associations between cognitive, psychosocial, somatic, and treatment factors and time to return to work (RTW) among women treated for early-stage BC.

Methods From the mammography screening program at Stockholm South General Hospital, we prospectively enrolled women aged 40 to 69 years who had a positive radiographic finding. All women completed the Headminder Web-based neuropsychological battery Cognitive Stability Index for response speed, processing speed, memory, and attention before diagnosis (T1), after surgery but before adjuvant treatment (T2), 6 months after starting adjuvant treatment (T3), and after another 3 months of follow-up (T4). Women with BC were divided into those receiving chemotherapy, hormone therapy, or no adjuvant medical therapy. Women eventually determined not to have BC served as healthy controls. At each test session, depression, anxiety, and quality of life were measured using the Swedish version of the Beck Depression Inventory, the Beck Anxiety Inventory, and the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire and its BC supplementary measure. The secondary aim was addressed by comparing the above-mentioned scores from BC women who had returned to work with those who had not, at both T3 and T4. We also reviewed the medical certificates of women still on sick leave at 8, 11, and 18 months after diagnosis to determine why they had not returned to work.

Results and Conclusion Of the 146 women enrolled, 77 had BC, of whom 18 received chemotherapy; 45, hormone therapy, and 14, no adjuvant medical therapy; 69 were healthy controls. At baseline, only response speed and processing speed differed significantly between groups. Our results suggest that a diagnosis of BC and subsequent surgery are not associated with substantial cognitive decline. However, the lack of improvement in attention at retest among BC patients may suggest a decline. Further, our results indicate subtle cognitive changes related to time and treatment. Chemotherapy may impair memory and response speed in women with BC, a finding consistent with those reported for BC survivors after adjuvant medical treatment. Breast cancer surgery and adjuvant treatment, irrespectively of type, reduces quality of life and psychological wellbeing, mostly related to time course. Global quality of life health status improved to baseline after 11 months from diagnosis. However, poor body image and lower subjective cognitive functions were sustained and should be addressed in long-term survivors of breast cancer to improve overall quality of life. Chemotherapy is associated with longer periods of sick leave. Cognitive functioning, objectively measured, does not predict RTW. Independently of any adjuvant therapy, most women eventually return to work in a few months. The ability to predict RTW after BC treatment should help prepare higher-risk women for delayed RTW and allow earlier interventions to restore their social relations and quality of life.